What is claimed is:

1   1.   A method, comprising:

2   mirroring data from a primary storage device at a first location to a

3   secondary storage device at a second location;

4   taking a snapshot of the primary storage device and of the secondary

5   storage device;

6   storing the primary storage device snapshot on a first snapshot

7   volume at the first location;

8   storing the secondary storage device snapshot on a second snapshot

9   volume at the second location; and

10   updating a data structure to record backup times for the first and

11   second snapshots and to record locations of the snapshots on the snapshot

12   volumes.

1   2.   The method of claim 1, further comprising repeating the

2   mirroring, taking, storing the primary storage device snapshot, storing the

3   secondary storage device snapshot, and updating so as to store multiple

4   generations of snapshots.

1   3.   The method of claim 2, further comprising:

2   selecting a snapshot to use to restore data to the primary storage

3   device;

4   determining if the selected snapshot is stored at the first location;

5   if the selected snapshot is stored at the first location, restoring data to

6   the primary storage device using the selected snapshot generation at the

7   first location;

8   if the selected snapshot is not stored at the first location,

9   synchronizing the secondary storage device with the selected snapshot

10   generation at the second location and then restoring data to the primary

11   storage device using data from the synchronized secondary storage device.

1   4.   The method of claim 1, wherein the taking of snapshots of the

2   primary and secondary storage devices is done simultaneously.

1   5.   The method of claim 3, wherein the selecting selects the most

2   recently created snapshot.

1   6.   The method of claim 3, wherein the selecting selects a snapshot

2   based on a user preference.

1   7.   The method of claim 2, further comprising deleting the oldest

2   snapshot at the first location and deleting the oldest snapshot at the second

3   location.

1   8.   The method of claim 1, further comprising determining if the

2   secondary storage device is solid state before taking a snapshot of the

3   secondary storage device.

1   9.   A computer-readable storage medium storing program code for

2   causing a computer to perform the steps of:

3   mirroring data from a primary storage device at a first location to a

4   secondary storage device at a second location;

5   taking a snapshot of the primary storage device and of the secondary

6   storage device;

7   storing the primary storage device snapshot on a first snapshot

8   volume at the first location;

9   storing the secondary storage device snapshot on a second snapshot

10   volume at the second location; and

11   updating a data structure to record backup times for the first and

12   second snapshots and to record locations of the snapshots on the snapshot

13   volumes.

1   10.   The computer-readable storage medium of claim 9, further

2   comprising program code to cause the computer to repeat the mirroring,

3   taking, storing the primary storage device snapshot, storing the secondary

4   storage device snapshot, and updating steps so as to store multiple

5   generations of snapshots.

1   11.   The computer-readable storage medium of claim 10, further

2   comprising program code to cause the computer to perform the steps of:

3   selecting a snapshot to use to restore data to the primary storage

4   device;

5   determining if the selected snapshot is stored at the first location;

6   if the selected snapshot is stored at the first location, restoring data to

7   the primary storage device using the selected snapshot generation at the

8   first location;

9   if the selected snapshot is not stored at the first location,

10   synchronizing the secondary storage device with the selected snapshot

11   generation at the second location and then restoring data to the primary

12   storage device using data from the synchronized secondary storage device.

1   12.   The computer-readable storage medium of claim 9, wherein the

2   taking of snapshots of the primary and secondary storage devices is done

3   simultaneously.

1   13.   The computer-readable storage medium of claim 11, wherein

2   the selecting selects the most recently created snapshot.

1   14.   The computer-readable storage medium of claim 11, wherein

2   the selecting selects a snapshot based on a user preference.

1   15.   The computer-readable storage medium of claim 10, further

2   comprising program code to cause a computer to delete the oldest snapshot

3   at the first location and delete the oldest snapshot at the second location.

1   16.   The computer-readable storage medium of claim 9, further

2   comprising program code to cause the computer to determine if the

3   secondary storage device is solid state before taking a snapshot of the

4   secondary storage device.

1   17.   A system, comprising:

2   means for mirroring data from a primary storage device at a first

3   location to a secondary storage device at a second location;

4   means for taking a snapshot of the primary storage device and of the

5   secondary storage device;

6   means for storing the primary storage device snapshot on a first

7   snapshot volume at the first location;

8   means for storing the secondary storage device snapshot on a second

9   snapshot volume at the second location; and

10   means for updating a data structure to record backup times for the

11   first and second snapshots and to record locations of the snapshots on the

12   snapshot volumes.

1   18.   The system of claim 17, further comprising means for repeating

2   the means for mirroring, means for taking, means for storing the primary

3   storage device snapshot, means for storing the secondary storage device

4   snapshot, and means for updating so as to store multiple generations of

5   snapshots.

1   19.   The system of claim 18, further comprising:

2   means for selecting a snapshot to use to restore data to the primary

3   storage device;

4   means for determining if the selected snapshot is stored at the first

5   location;

6   means for restoring data to the primary storage device using the

7   selected snapshot generation at the first location when the selected

8   snapshot is stored at the first location;

9   means for synchronizing the secondary storage device with the

10   selected snapshot generation at the second location and then restoring data

11   to the primary storage device using data from the synchronized secondary

12   storage device when the selected snapshot is not stored at the first location.

1   20.   A method of backing up a first logical volume in a first storage

2   subsystem to a second storage subsystem connected to the first storage

3   subsystem via a path, the method comprising the steps of:

4   providing a second logical volume, a third logical volume, and a fourth

5   logical volume in the second storage subsystem, the second logical volume

6   being a copied logical volume of the first logical volume, the first and second

7   logical volumes being in synch state, the third and fourth logical volumes

8   being copied logical volumes of the second logical volumes, the second, the

9   third and the fourth logical volumes being in synch state, and

10   splitting the second logical volume from the first logical volume,

11   splitting the third logical volume from the second logical volume,

12   synchronizing the second logical volume with the first logical volume,

13   splitting the second logical volume from the first logical volume,

14   splitting the fourth logical volume from the second logical volume, and

15   synchronizing the second logical volume with the first logical volume.